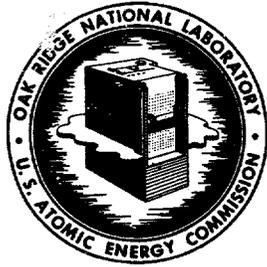


OAK RIDGE NATIONAL LABORATORY
Operated by
UNION CARBIDE NUCLEAR COMPANY
Division of Union Carbide Corporation



Post Office Box X
Oak Ridge, Tennessee

ORNL
CENTRAL FILES NUMBER
58-11-44

DATE: November 17, 1958
SUBJECT: Fallout from 3505 Metal-Recovery Stock
on Malan Contractor's Area, Jan. 17, 1956.
TO:
FROM: W. W. Ogg

COPY NO. 1

INTER-COMPANY CORRESPONDENCE
 UNION CARBIDE NUCLEAR COMPANY
 A Division of Union Carbide and Carbon Corporation

To: R. A. Charpie

Plant: X-10

Date: January 18, 1956

Copies To: H. H. Abee
 T. J. Burnett
 K. Z. Morgan
 W. W. Ogg
 A. D. Warden

Subject:

Karl has just asked me to give you a quick run-down on the incident which occurred yesterday at the FFPF job site. Perhaps the simplest way to do this is to discuss the situation as things occurred in chronological order.

1. At approximately 9:00 a.m. Health Physicist W. W. Ogg, while performing a routine survey, detected high background and contamination on the job site. Subsequently, it was determined that there was extensive contamination having the appearance of "fall-out" blanketing the entire area. Some of the workmen were checked and found to be contaminated up to 6 mr/hr most of which was in the clothing.

2. Ogg called this office informing me of his findings (which is in keeping with our established procedure since there are numerous complications with this contract). Ogg then proceeded through channels on the job site to have the men called up for checking.

3. When I arrived at the job site at about 9:30 a.m., work had come to a standstill, the man had been moved to the west side of the site in standby, and Ogg was proceeding to take further measurements. Dave Cardwell, et.al., arrived a few minutes later having been previously informed of the situation. At approximately 10:00 a.m., persons representing the Laboratory, the Architect Engineers, the AEC, and the contractor himself were in conference. It was determined:

- a. To halt all work until the condition could be evaluated.
- b. To check all men for contamination and effect clean-up as required.
- c. To determine the source of contamination, whether or not it was a continuing thing, and how serious.

This document has been approved for release to the public by:

David R. Hamm
 Technical Liaison Officer
 ORNL Site

6/27/95
 Date

~~OFFICIAL USE ONLY~~
 OFFICIAL USE ONLY



R. A. Charpie

- 2 -

January 18, 1956

4. Personnel

- a. Two guards were dispatched to the job site to perform escort duty.
- b. Arrangements were made to utilize the "Ferguson" change house, Bldg. 2502, for decontamination.
- c. The men were escorted to the change house in groups of ten where, in this low background area, more accurate checking could be performed. By 2:00 p.m. 32 workmen had been cleared and this task was completed. (It was not necessary to send certain administrative personnel to the clean-up facility.) ORNL clothing was issued to 25 men to enable them to get home. Three were contaminated on their person requiring a shower. As of now there are 25 piles of clothing taken from the 25 individuals which, if decontaminatable, will be returned to the owners. It is our guess that about 30% of the clothing can not be returned, and arrangements will be made for due compensation.
- d. Dr. Lockett assisted with the taking of 24 nose swabs. Four or five indicated some contamination, the highest of which was 10 counts/minute.
- e. We are preparing to obtain urine specimens on those individuals, perhaps five, who had the greatest likelihood of significant ingestion and/or inhalation.
- f. Since it is more likely that the fall-out occurred after 5:00 p.m. Monday, January 16, we will check the homes of the five persons who were at the job site following this hour. (One of these was the "superintendent". Clothes brought from his home were highly contaminated.)
- g. It is suffice to say that complete records were kept on each individual concerned.

5. Probable Source of Contamination

- a. After considering many probable sources of activity and taking into account wind direction, ground measurements, etc., it is most likely that the contamination came from the Metal Recovery operation. Although there is a slim chance that the release came from the W-19 or W-20 tank, the off-gas system is probably the source of activity. The wind was such as to pick up any material released here and send it directly over

R. A. Charpie

January 18, 1956

the area now contaminated. The off-gas stack, extending a few feet over the building, literally hangs over the diggings. They were in the process of reworking some old materials which had been processed earlier. Jetting operations occurred around 6:00 p.m. on Monday (and two later on during the evening). As you know, jetting is performed with live steam under pressure. The steam becomes a part of the off-gas and, on occasion, entrainment occurs such that activity is carried out. When one studies a diagram of the off-gas system, it is difficult to see how it can fail if everything works. However, there is always the chance that something does not work, and there are three or four possibilities which could have caused the activity release. We are, at the moment, working with K. Jackson and his men on this problem. A direct examination of the contaminant disclosed that the material is long-lived, predominately Co^{137} and Ru^{106} .

6. Current Planning on Course of Action - In a conference held today with representatives of the ABC, Mr. Cardwell's group, Health Physics, and M. E. Ramsey, it was determined that since the activity will decay slowly it must either (a) be removed or (b) plans made to work with it. In regard to the former, attempts are now being made at decontamination, with conflicting opinions as to how successful decontamination will be. If decontamination is not successful, and the latter course taken, we have been informed that the contract will have to be renegotiated to include provisions for protective clothing, clean-up facilities, additional monitoring, etc.

It is hoped that the story will be sufficiently complete by Friday of this week to make a firm decision one way or the other.

J. C. Hart
Health Physics Division

JCH:mfa

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: R. A. Charpie

Plant: I-10

Date: January 18, 1956

Copies To: H. H. Abee
T. J. Burnett
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January 18, 1956

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J. C. Hart
Health Physics Division

JCH:mfu

Other badges picked up and processed -

Badge No.	OW	S	PTR	
C 748	580/.08	80/.02	500	
C 756	380/.06	80/.02	300	
T 584 # 752	300/.05	0/0	300	
C 749	380/.06	0/0	380	
C 751	300/.05	0/0	300	
C 726	380/.05	0/0	300	
C 724	240/.04	0/0	240	
C 721	300/.05	0/0	300	
C 703	380/.06	0/0	380	
C 708	1010/.11	80/.02	930	
T 844 c # 776	380/.06	0/0	380	
T 557 c 801	670/.09	0/0	670	Dec. 9, 55 film
C 801	890/.12	110/.03	780	Dec. 9, 55 film
C 841	830/.11	50/.01	680	Dec. 8, 55 film
C 842	830/.11	50/.02	750	Dec. 9, 55 film
B-1	480/.07	80/.02	400	North Wall of shack
B-2	300/.05	0/0	300	South Meter rack
B-3	380/.06	0/0	380	West Meter rack

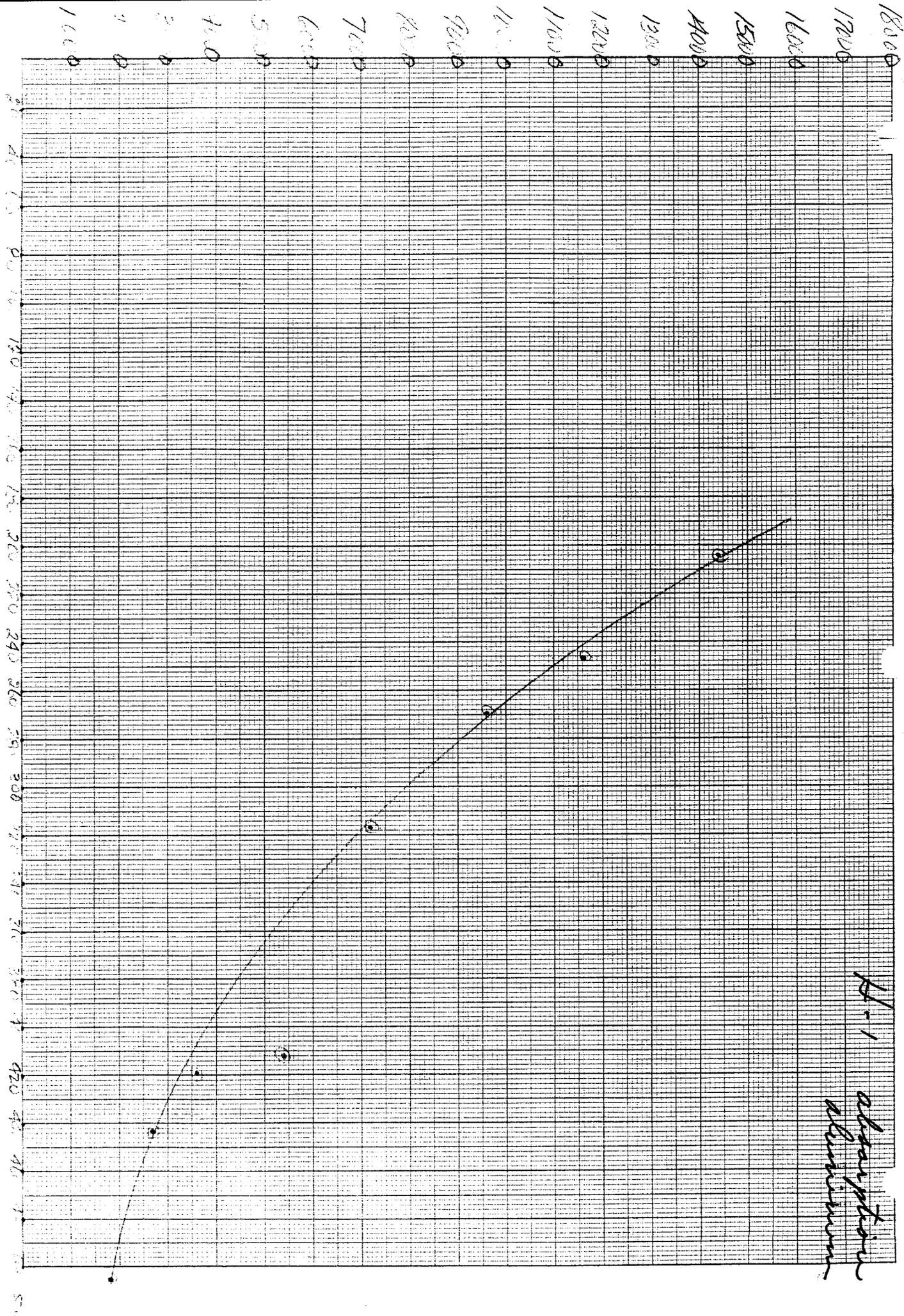
Name	Badge No.	Film Badge Readings			Readings Corrected For BG		
		OW	S	PTR	OW	S	PTR
[REDACTED]	536	Not Processed					
[REDACTED]	704	1800/.27	190/ 250.06	1610			
[REDACTED]	705	1680/.25	245/.08	1435			
[REDACTED]	709	2600/.38	220/.07	2380			
[REDACTED]	710	380/106	50/.01	330			
[REDACTED]	711	580/.08	80/.02	500			
[REDACTED]	712	380/.06	0/0	380			
[REDACTED]	713	300/.05	0/0	300			
[REDACTED]	714	380/.06	0/0	380			
[REDACTED]	715	380/.06	80/.02	300			
[REDACTED]	716	Not Processed					
[REDACTED]	717	240/.04	0/0	240			
[REDACTED]	719	Not Processed					
[REDACTED]	720	240/.04	0/0	240			
[REDACTED]	722	380/.06	50/.01	330			
[REDACTED]	723	240/.04	0/0	240			
[REDACTED]	729	380/.06	80/.02	300			
[REDACTED]	761	240/.04	0/0	240			
[REDACTED]	762	Not Processed					
[REDACTED]	764	380/.06	0/0	380			
[REDACTED]	765	380/.06	50/.01	330			
[REDACTED]	766	1320/.19	135/.04	1185			
[REDACTED]	767	300/.05	0/0	300			
[REDACTED]	768	240/104	0/0	240			
[REDACTED]	769	240/.04	0/0	240			
[REDACTED]	770	520/.08	80/.02	440			
[REDACTED]	771	Not Processed					
[REDACTED]	772	240/.02	0/0	240			
[REDACTED]	774	Not Processed					
[REDACTED]	775	380/.06	80/02	300			

Name	Badge No.	Film Badge Readings			Readings Corrected For BG		
		OW	S	PTR	OW	S	PTF
[REDACTED]	791	380/.06	0/0	380			
		Not Processed					

Other Badges Picked up and processed.

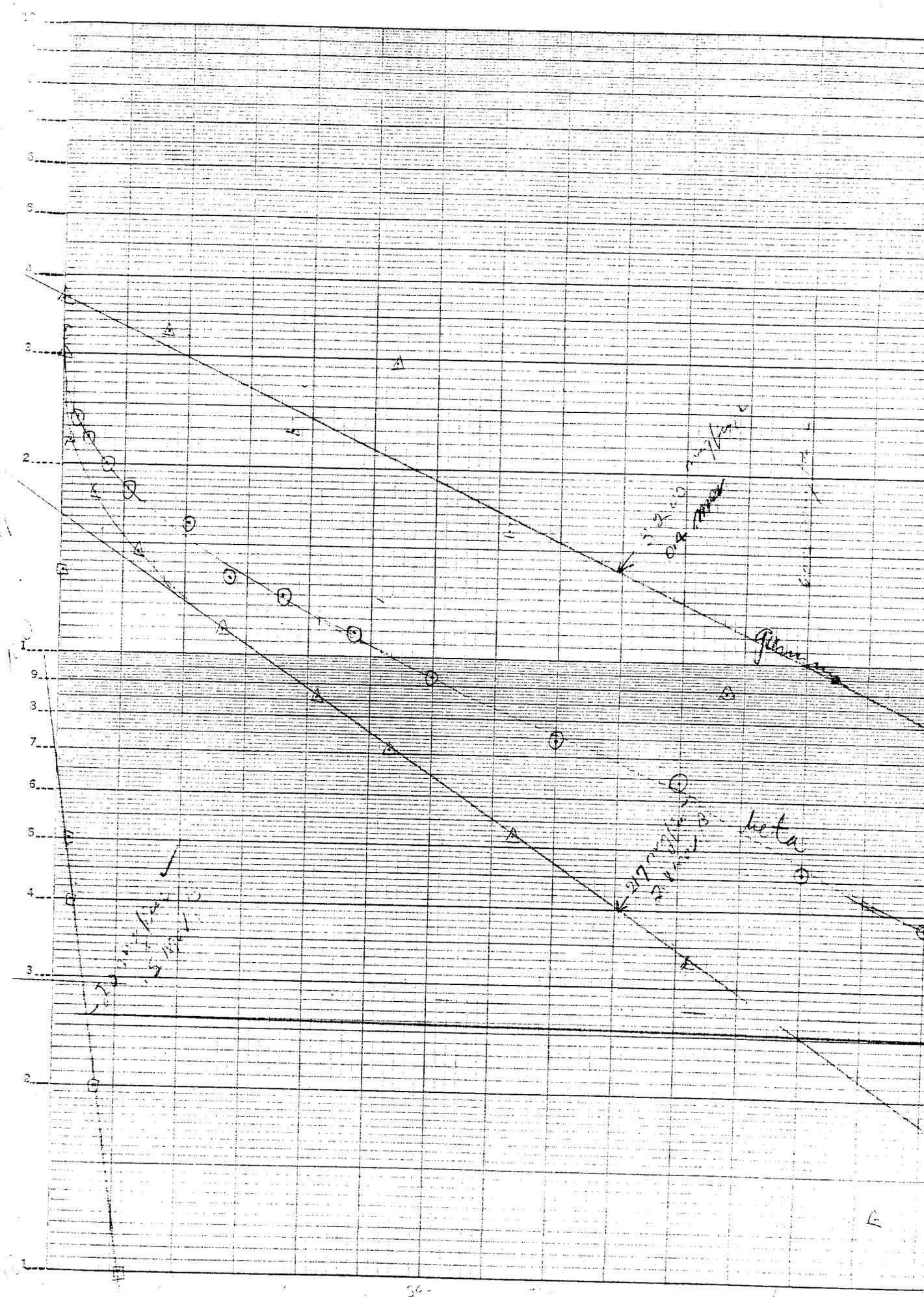
c-748		580/.08	80/.02	500
c-756		380/.06	80/.02	300
t-584	c752	300/.05	0/0	300
c-749		380/.06	0/0	380
c-751		300/.05	0/0	300
c-726		300/.05	0/0	300
c-724		240/.04	0/0	240
c-721		300/.05	0/0	300
c-703		380/.06	0/0	380
c-708		1010/.14	80/.02	930
t-844	c776	380/.06	0/0	380
t-557	c801	670/.09	0/0	670
c-801		890/.12	110/.03	780
c-841		830/.11	50/.01	680
c-842		830/.11	80/.02	750

COUNTS PER MINUTE



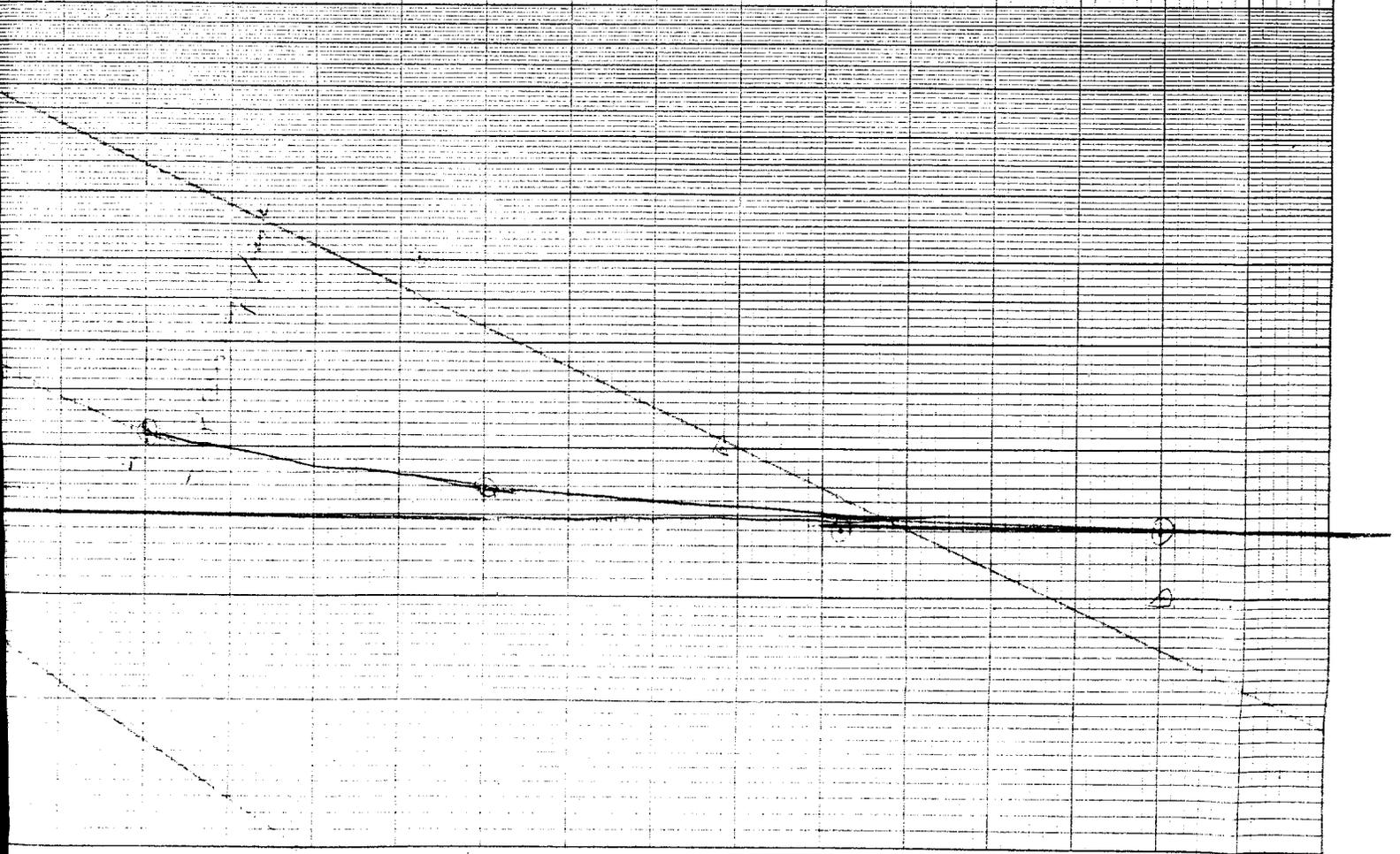
A-1
Absorption
Minimum

354-621 KEUFFEL & ESSER CO.
2 Cycle 1.5 inch
10/1/54



M-1

1-18-56



1410

COUNTING ROOM DATA - HEALTH PHYSICS DIVISION, ORNL

Instrument No. 50007 Background 19.0 C/M Geometry 8.87 % Study
 Window (mg/cm²) 1.8 Recorder Reading 112 Scaler Factor _____ Date of Sample 1-19-52

Counting Date or Sample No.	Dish No.	Shelf No.	Absorber mg/cm ²	Recorder Reading	Lights	Time Mins.	C/M	CCC	CCB	CCG	Remarks
711-12			0	190	32	2	6096				
			10	221	10	3	4718				
			20	194	7	3	4141				
			34	187	31	3	3979				
			55	165	36	3	3538				
			102	144	46	3	3194				
			137	134	2	3	2526				
			144	157	2	4	2577				
			233	132	3	4	2129				
			300	131	45	5	1686				
			400	128	9	7	1171				
			500	86	24	7	789				
			600	64	43	8	517				
			700	50	59	10	326				
			800	30	49	10	197				
			1000	16	50	14	76				
			1210	17	37	14	34				
			1400	11	34	30	24				
			2400	13	22	40	27				

Note: CCC - Counts per minute (C/M) corrected for coincidence at _____ %/thousand (0 - 5,000 C/M) which ever applies
 (5,000 - 15,000 C/M)
 (15,000 - 30,000 C/M)
 CCB - C/M corrected for background; CCG - Counts per minute corrected to 10% geometry.

10-1-54

LEIBERS DITZELH CO.
MADE IN U.S.A.

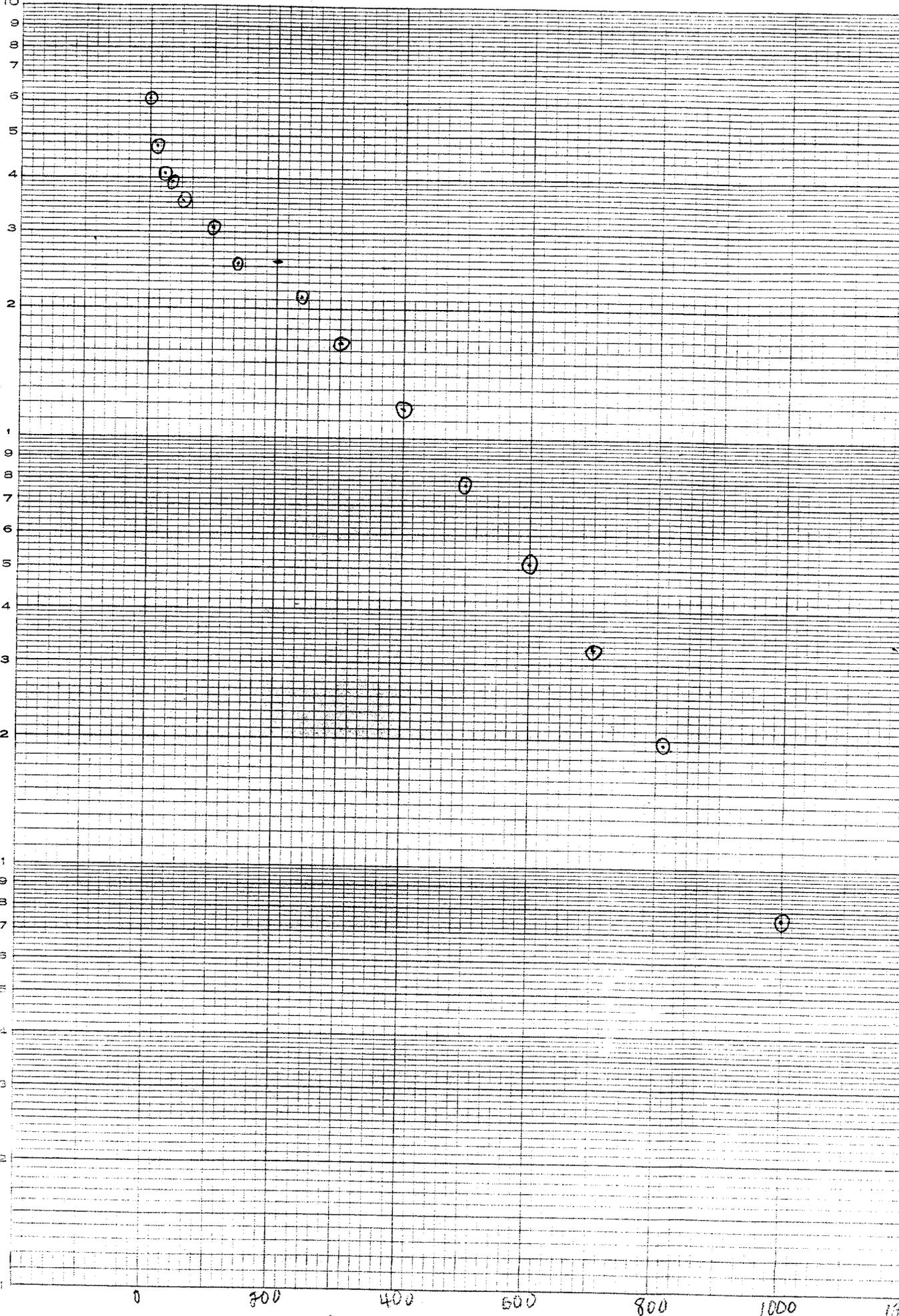
4111

1 1/2" x 12" HELIXER KNIFE PAPER
SEMI-LOGARITHMIC
1/4" BY 1/2" X 12" DIVISIONS PER INCH

1000

100

10



M-1 i

1-19-56

1400

1600

1800

2000

2200

2400

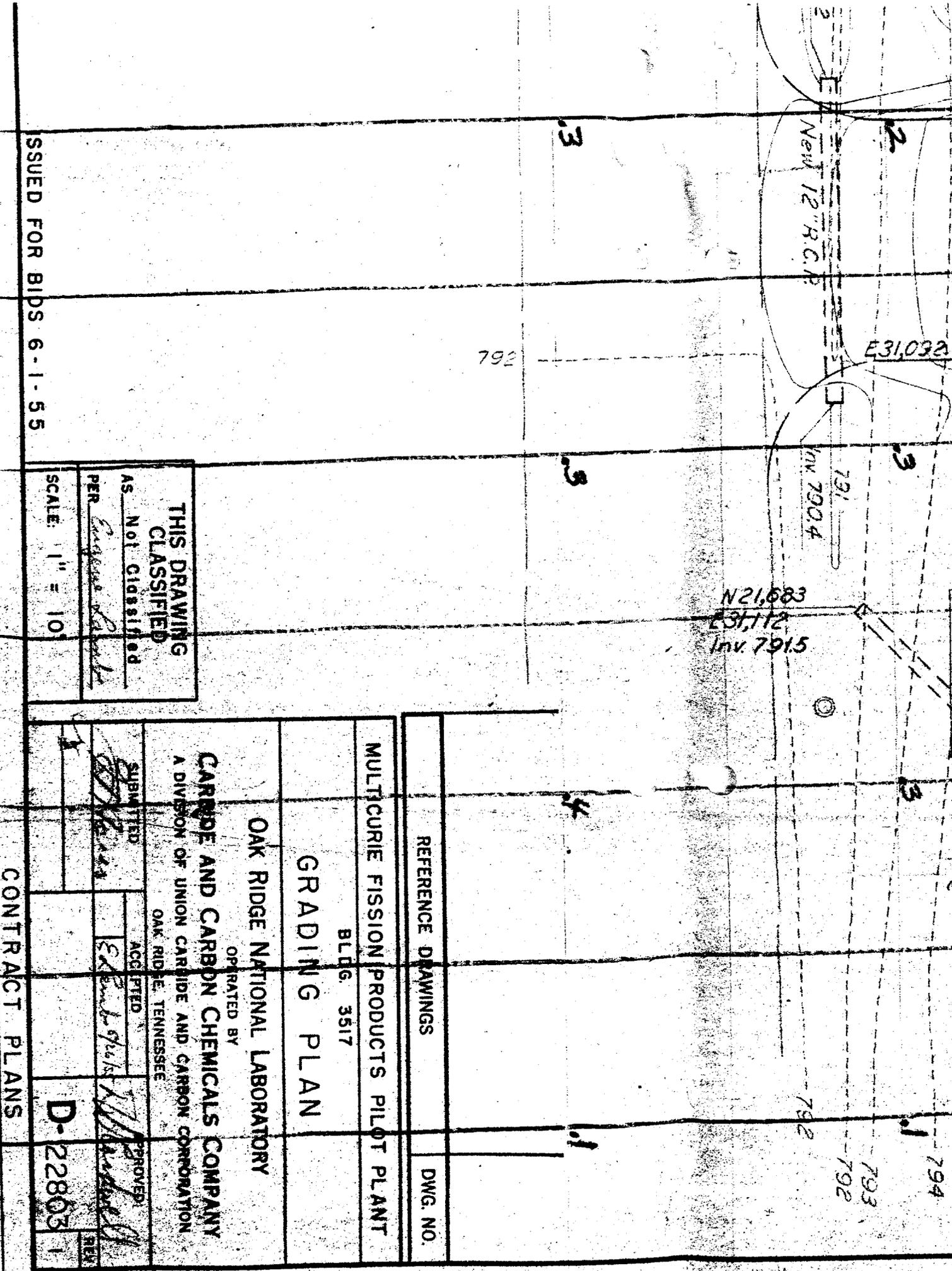
⊙

⊙

0.772

- 1 W. edge of S. Tank farm, S. evaporator
- 2 NW edge of Melon area (old address yard)
- 3 Tank farm driveway S 3515
- 4 S. edge N. Tank farm, near no. Shop driveway
- 5 Lawn in front of 3550 Quinch room
- 6 SW corner 3550
- 7 NE. edge of Melon lot, at vehicle gate
- 8 10' W of settling basin diversion box along
- 9 Lawn of N.W. corner of 4501
- 10 150' S. of 3505, on top of steel drum, Melon area
- 11 N. 3038

6-13-17
 8-5-18
 7-10-15



ISSUED FOR BIDS 6-1-55

THIS DRAWING
CLASSIFIED
AS NOT CLASSIFIED
PER *Engineer's Report*

SCALE: 1" = 10'

CONTRACT PLANS

OAK RIDGE NATIONAL LABORATORY OPERATED BY CARBIDE AND CARBON CHEMICALS COMPANY A DIVISION OF UNION CARBIDE AND CARBON CORPORATION OAK RIDGE, TENNESSEE	
SUBMITTED <i>[Signature]</i>	ACCEPTED <i>[Signature]</i>
APPROVED <i>[Signature]</i>	REV. 1
REFERENCE DRAWINGS MULTICURIE FISSION PRODUCTS PILOT PLANT BLDG. 3517 GRADING PLAN	
DWG. NO. D-22803	

MATERIALS LIST

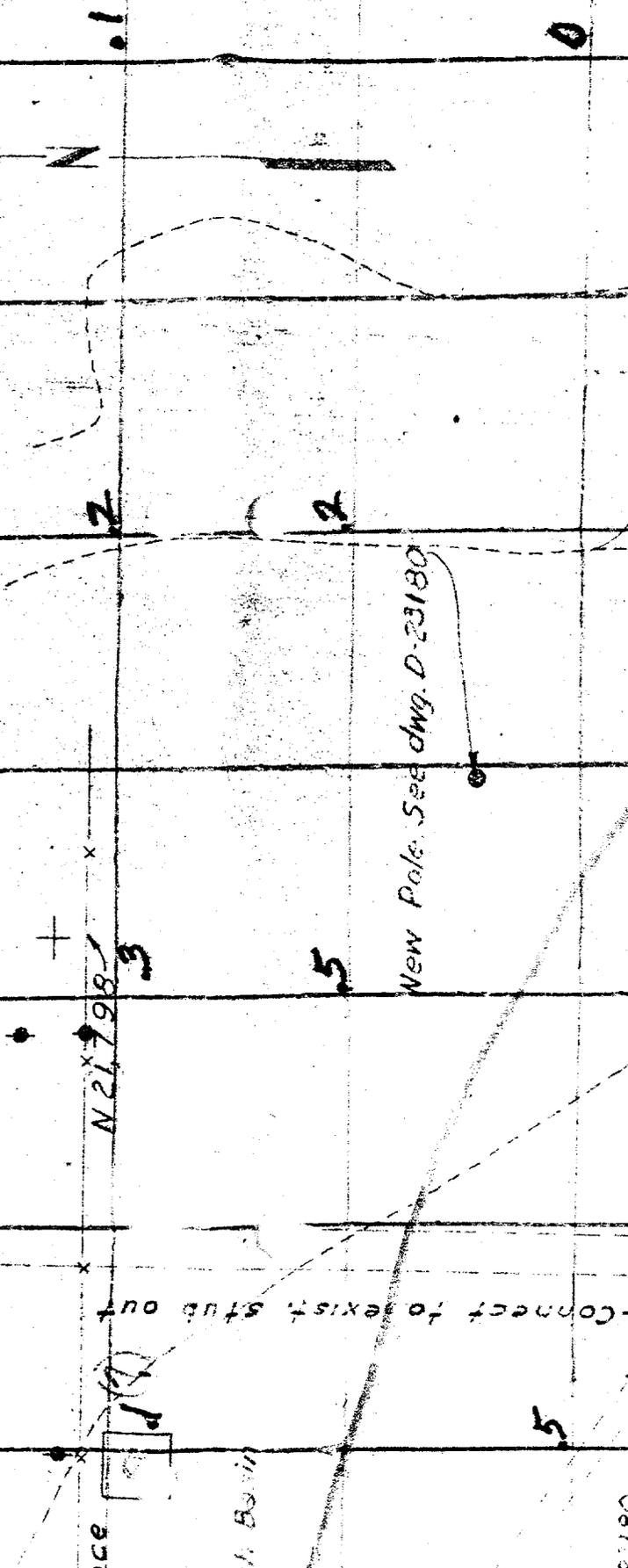
ITEM NO.	DWG. NO.	QTY.	NAME	SIZE	MATERIAL

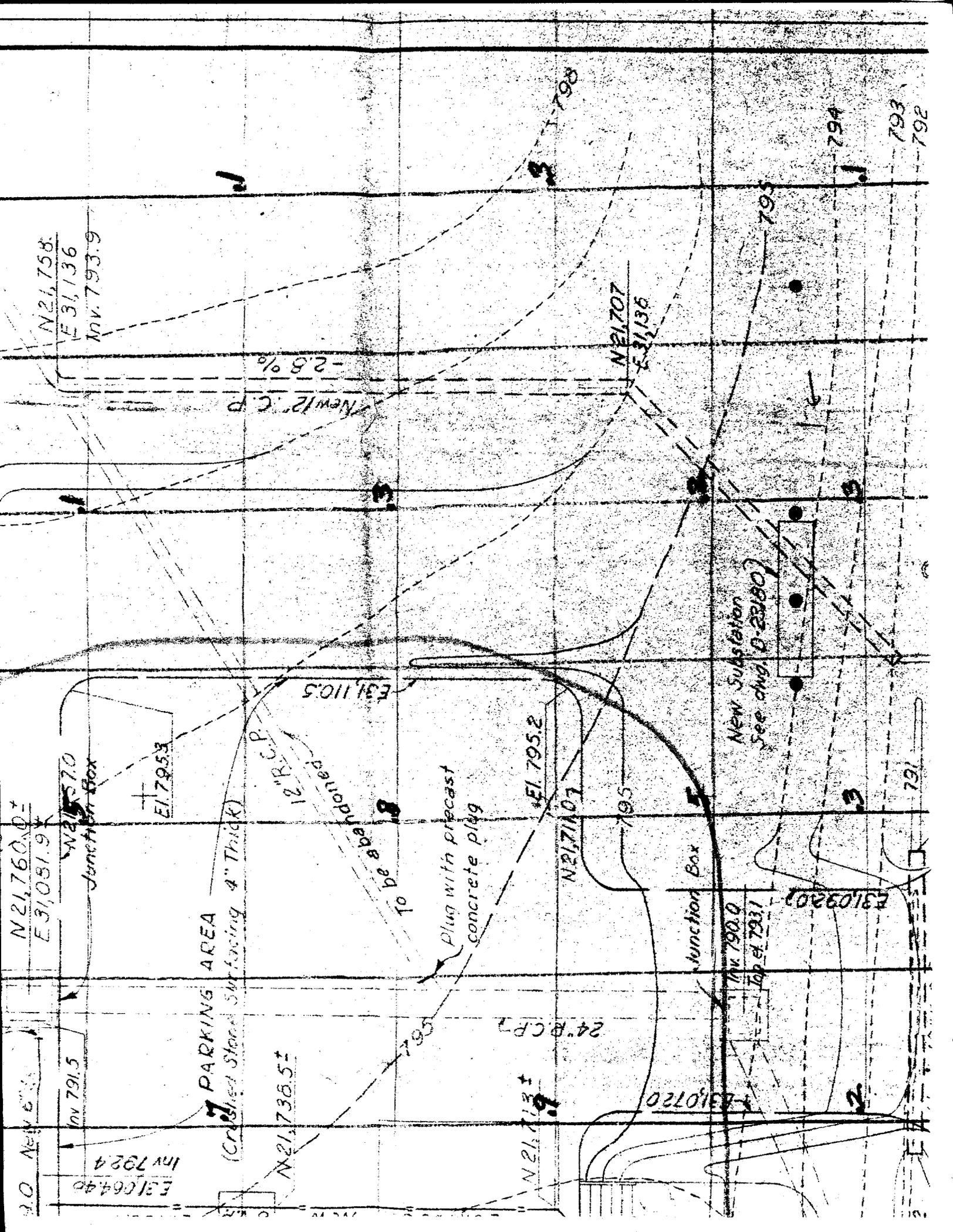
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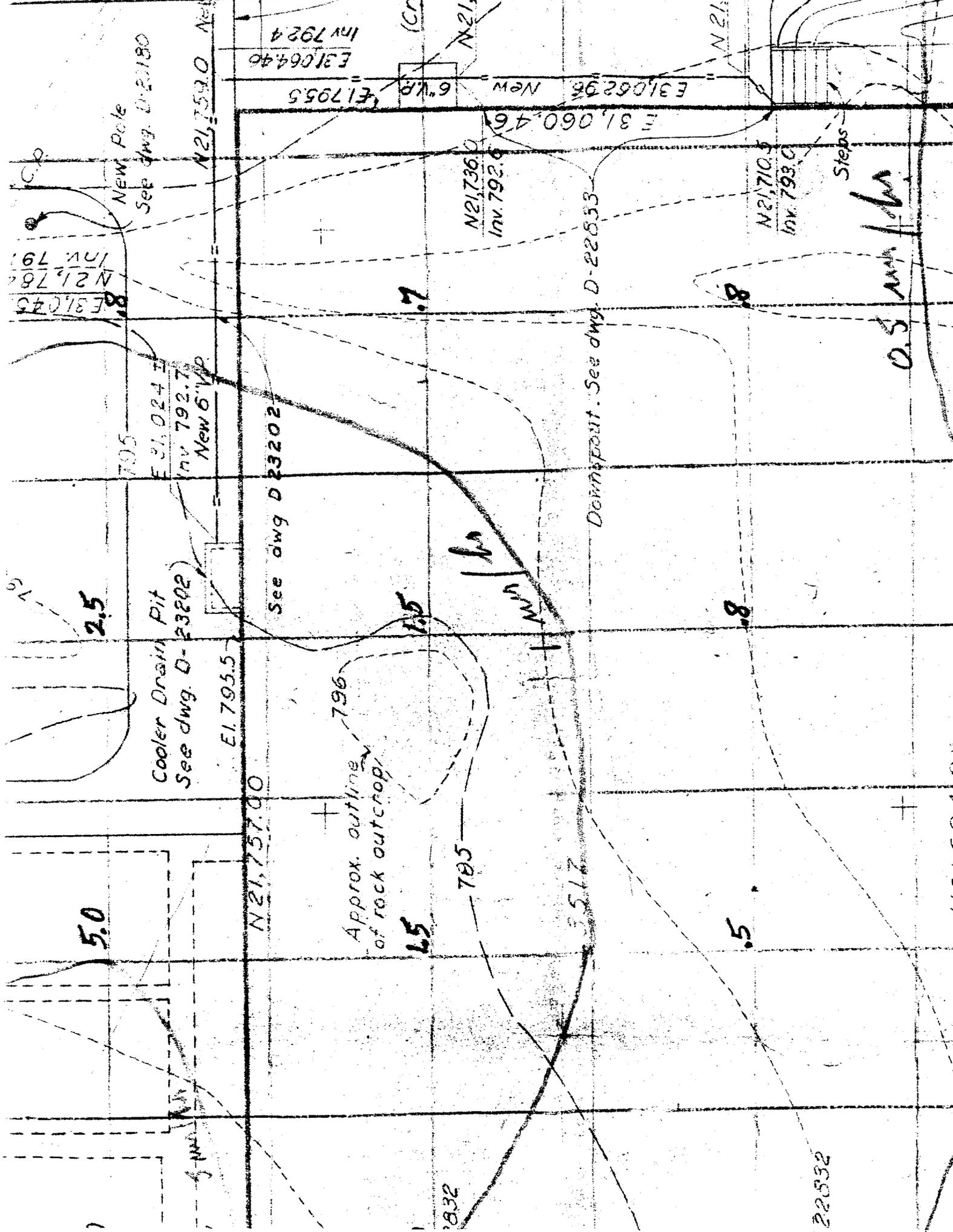
N21798

Connect to exist. stud out

New Pole. See dwg. D-23180







NEW Pole
See dwg. D-23180

Cooler Drain Pit
See dwg. D-23802

Approx. outline
of rock outcrop

DRAINAGE
See dwg. D-22853

Steps

0.5 mm / in

5.0

2.5

1.5

1.5

0.5

8

2832

22852

E31,045
INV 791.78

795

E31,024.1
INV 792.7
New 6" V.P.

E1,795.5

N21,757.00

See dwg. D-23202

E31,064.40
INV 792.4

E31,062.96
New 6" V.P.
E1,795.5

7

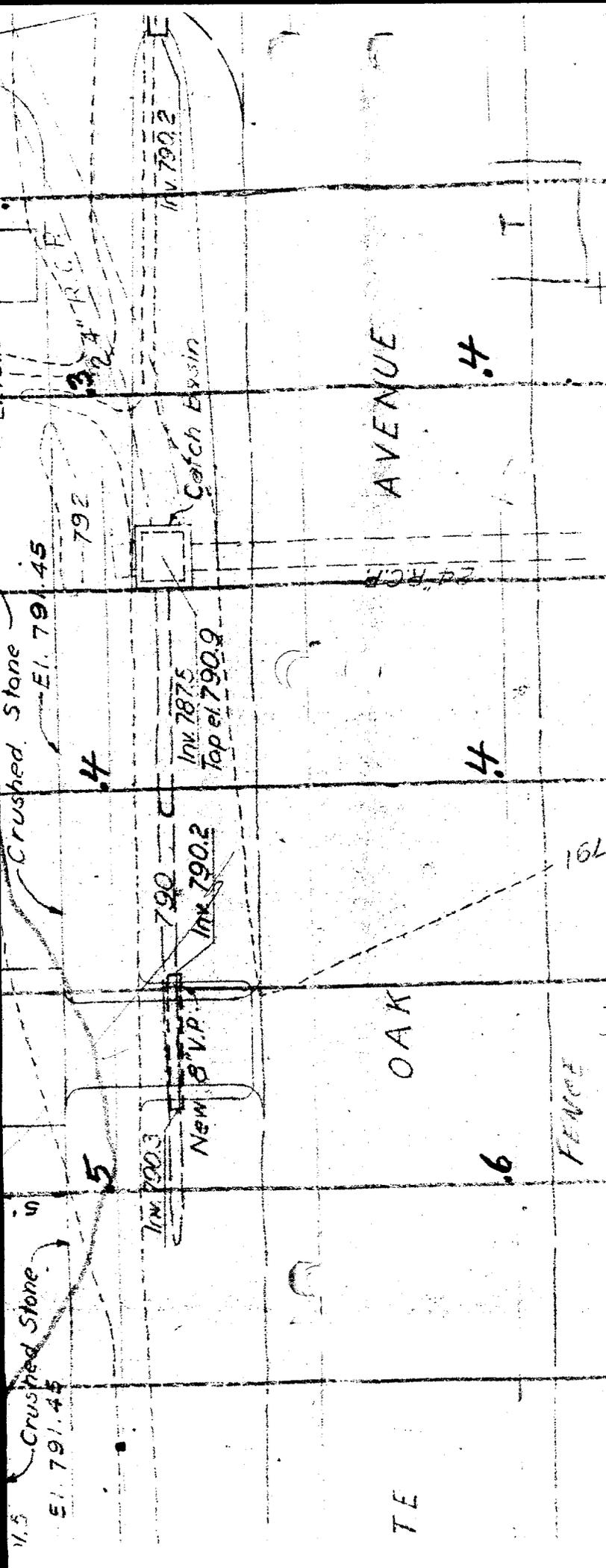
785

N21,736.0
INV 792.6

3517

N21,710.5
INV 793.0

N21,694.00



- Existing Contours
- Finish Contours
- Street or Driveway
- Storm Sewer
- Condensate and/or Roof Drain
- Manhole
- Steam Pole

- Power Pole
- Buy Anchor
- C.P. Concrete Pipe
- RCP Reinforced Concrete Pipe
- V.P. Vitrified Clay Pipe
- El. Elevation
- Inv. Invert elevation

LEGEND

FENCE

TE

OAK

AVENUE

4

4

6

T

Crushed Stone

Crushed Stone

Catch Basin

New 8" V.P.

El. 791.45

El. 791.45

Inv. 787.5
Top el. 790.9

Inv. 790.2

Inv. 790.3

Inv. 790.2

792

4

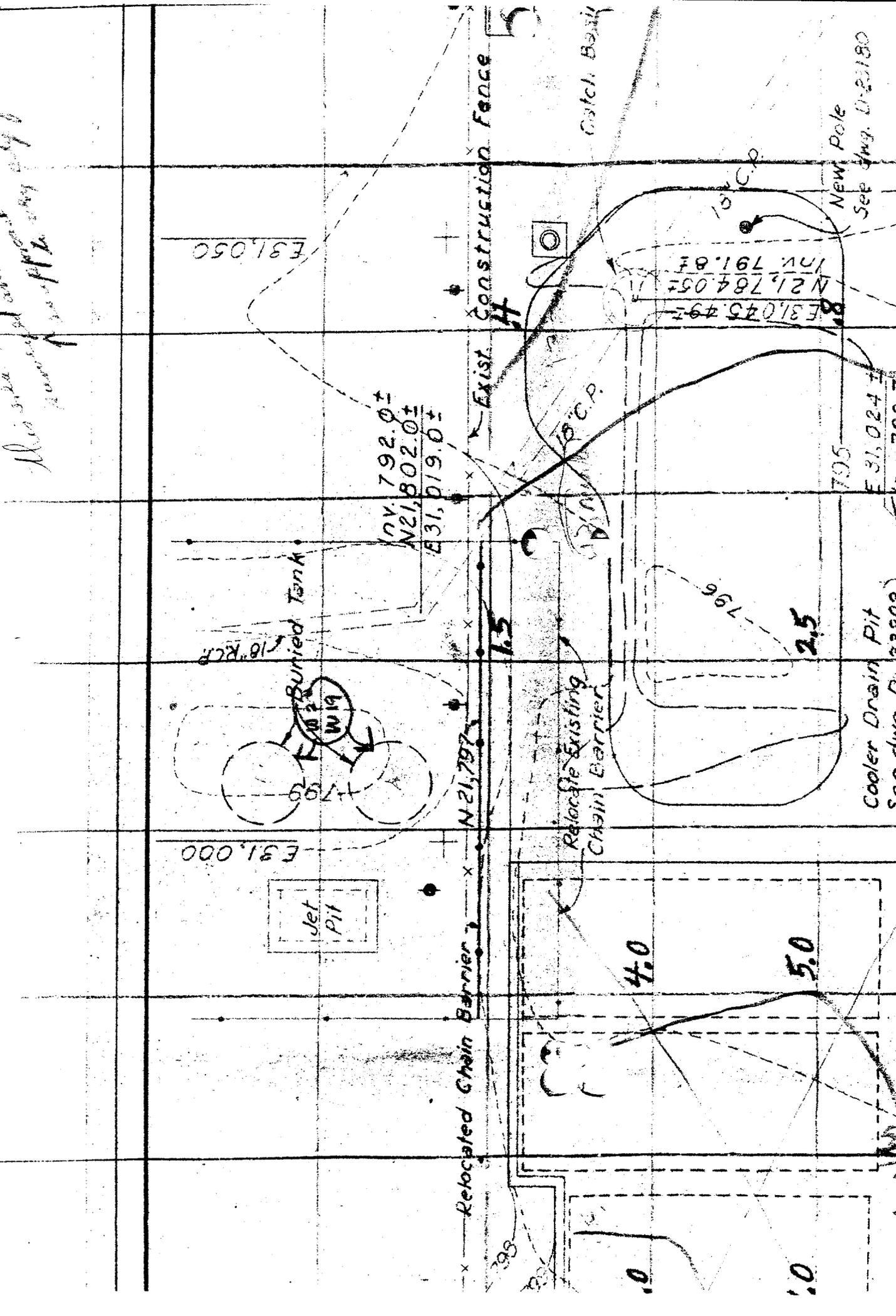
5

791

3
2
4" R.C.P.

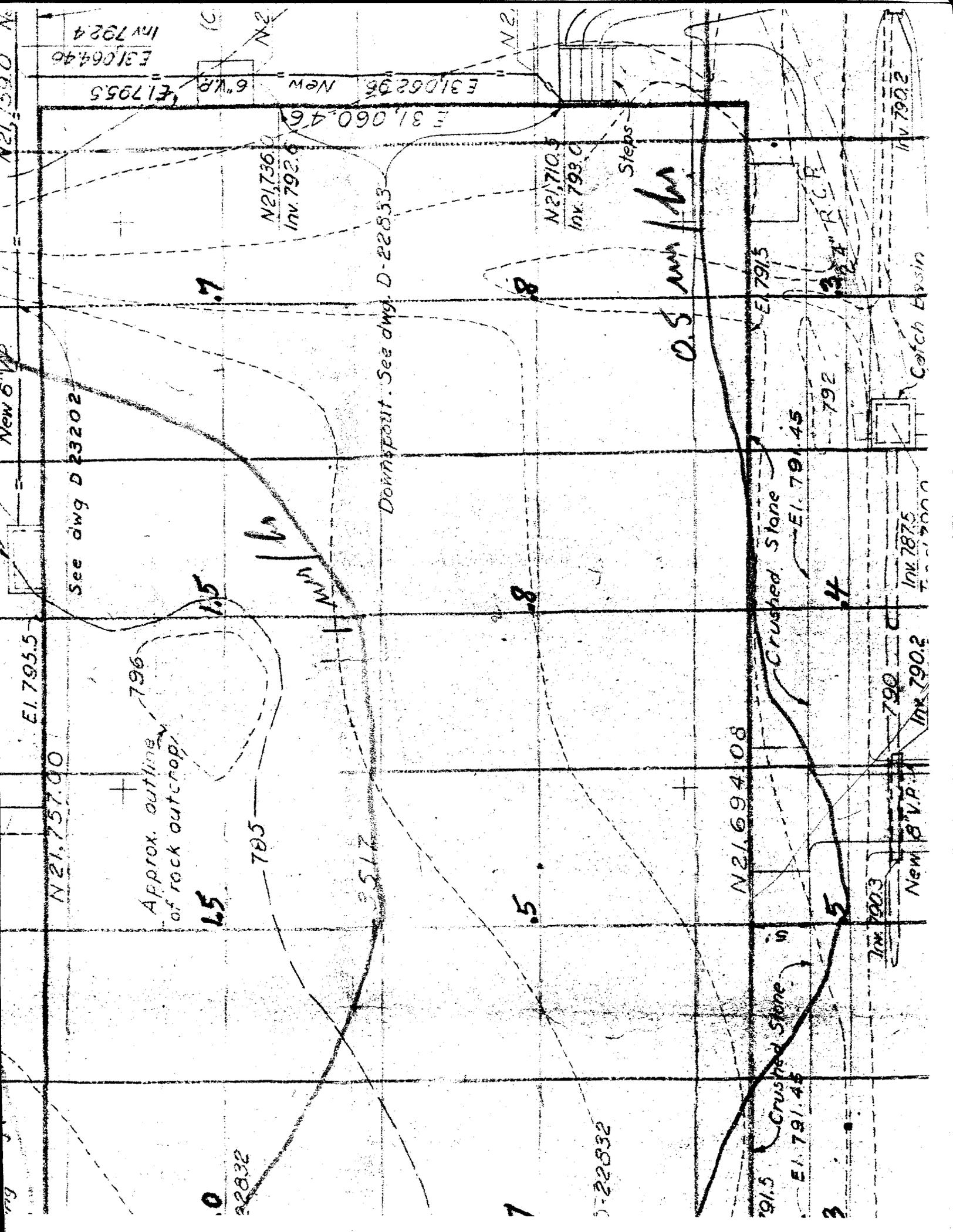


Notes: 1. See plan and section 155-1-1-1
2. See plan and section 155-1-1-2
3. See plan and section 155-1-1-3



New Pole
See Eng. D-21180

Cooler Drain Pit
See Eng. D-21180



E31064.40
Inv 792.4

E31062.36 New 6" V.P. E1795.5

E 31,060.46

N21736.0
Inv. 792.6

N21710.5
Inv. 798.0

Inv 790.2

See dwg D-23202

Downspout. See dwg. D-22833

0.5 mm/m

E1795.5

N21737.00

Approx. outline of rock outcrop

1.5

7.05

8.5

8.5

N21694.08

Crushed Stone

E1791.45

7.92

Inv 787.5

Inv 790.2

New 8" V.P.

Inv 790.3

7.90

Inv 790.0

Catch Basin

3.24 R.C.P.

E1791.5

D-22832

D-22832

Fig

4" (on top) (on top)

8" (on top) (on top)

1.0

4

3.0

7.0

Gas Pressure Regulating Pit. See dwg. D-22832

N21,757.0

E1,795.3

PARKING AREA
(Crushed Stone Surface 4" Thick)

5

1.0

Downspout. See dwg. D-22832

N21,736.0

Inv. 793.0

E30,873.0

New 6" R.P.

N21,722.5

E30,925.54

E 30,936.54

E 30,938.7

E1,795.5

3

E 795.2

3

N21,711.0

N21,709.5

Inv. 792.3

4

E 67.0

N21,710.5

Inv. 792.6

Downspout. See dwg. D-22832

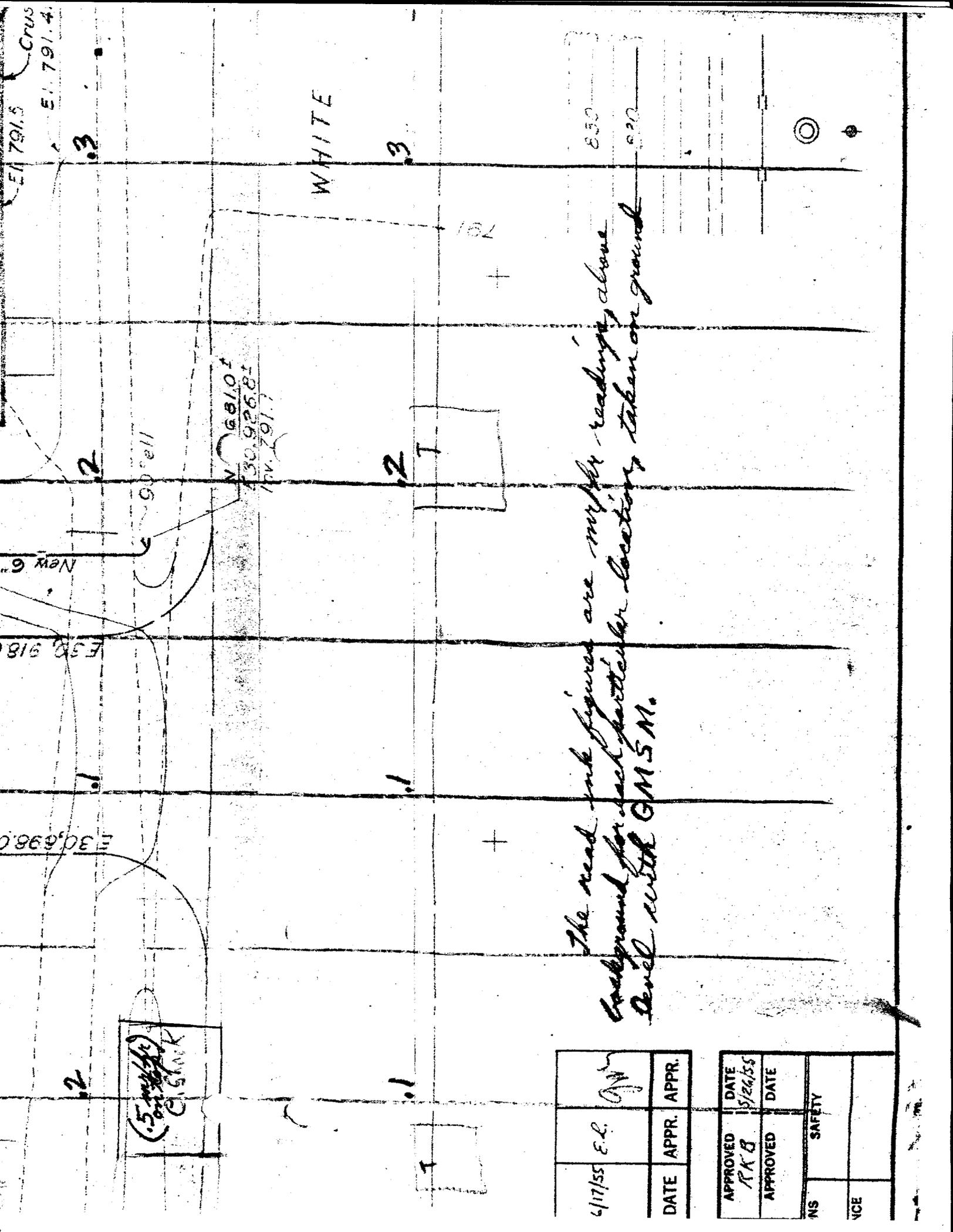
7

7.95

7.95

1" (on top)

me



WHITE

The read ink figures are my Mr readings above background for each particular location taken on ground level with GMSM.

(5 m/s)
C. SHANK

N 66101
30,926.81
104,291.7

6/17/55	E.L.	APPR.
DATE	APPR.	APPR.

APPROVED	DATE
RKB	5/26/55
APPROVED	DATE
NS	SAFETY
VICE	

Pit See dwg. D-2200s

N21,757.0

E1,795.3

PARKING AREA
Crushed Stone Surface 4" Thick

5

E30,873.0

N21,725.54

New G.V.P.

E30,925.54

E1,795.2

N21,711.0

N21,709.5

Inv. 792.3

6" V.P.

7.95

Steps

Flume

Shack (cont.)

E30,918.0

New G.V.P.

E30,936.7

E30,868.0 E

2

2

(15' x 10')
Shack

210

90° Well

1.0

Downspout: See dwg. D-22032

N21,736.0

Inv. 793.0

F 30,936.54

7

N21,710.5

Inv. 792.6

Downspout: See dwg. D-22032

E1,791.5

E1,79

3

(2" x 1/2" on top)
(4" x 1/2" on top)
(4" x 1/2" on top)

1.0

7.95

E1795.3

PARKING
(Crushed Stone)

5

E30,873.0

E1795.2

E1711.0

7.95

(2" x 1/2" on top)

4

N21,750

12" R.C.P.

24" R.C.P.

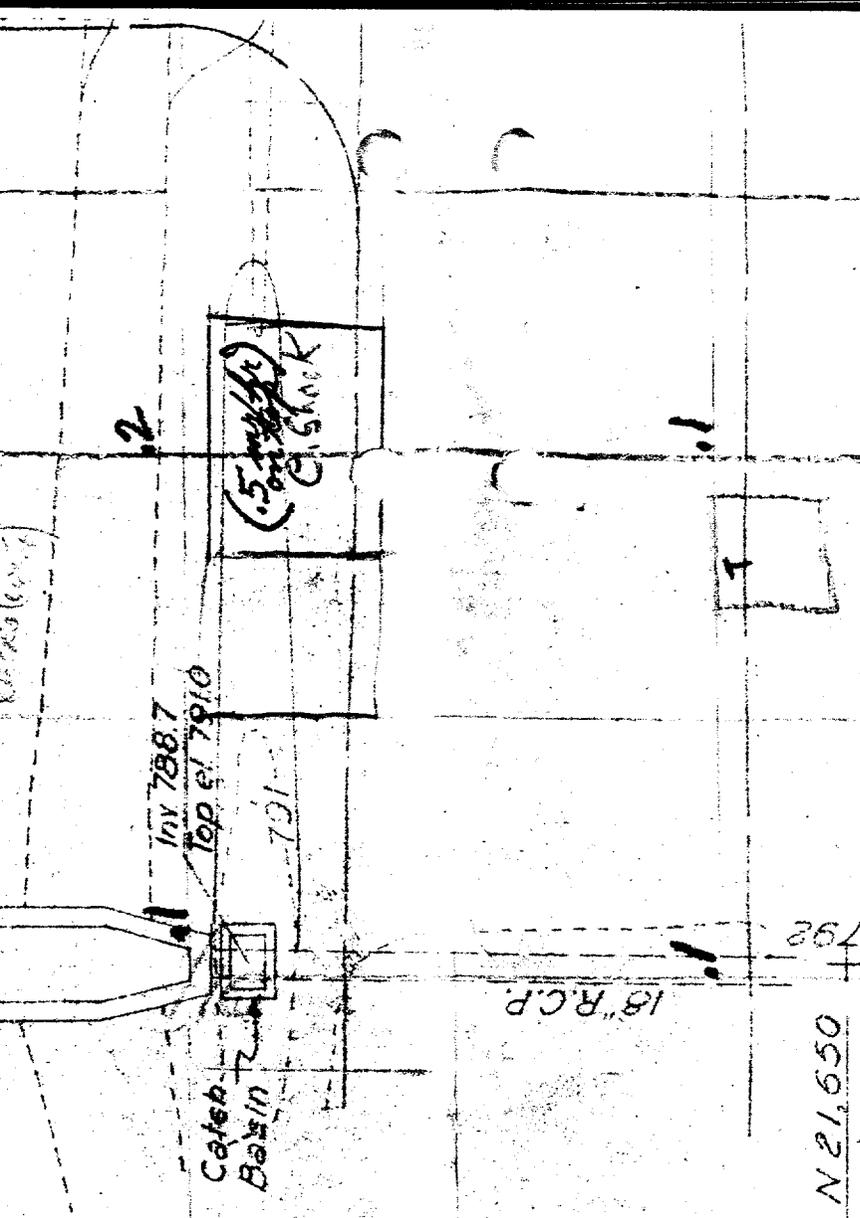
Inv 792.3

Inv 792.2

7.95

N21,700

Concrete Flume



NO.	REVISIONS	DATE	APPR.
R-1	Exist. contours between N21,685± & N21,800±, E30,920± & E31,065± revised to reflect recent site preparation grading. Exist. construction fence added.	6/17/55	E.C. <i>[Signature]</i>

DRAWING NO. D-22803 R.1.			
DRAWN	DATE	CHECKED	DATE
AMC	5-55	CMC	5-55
DESIGNED	DATE	SUBMITTED	DATE
A.H.A.	5-55	J.H.L.	5-55
HEALTH PHYSICS		MEDICAL	
FIRE PROTECTION		RESEARCH SHOP	
OPERATIONS		SAFETY	
MAINTENANCE		<i>[Signature]</i>	

The re background level with

N 21,650

792

18" R.C.P.

(5.5' x 4.5')
Catch Basin

Inv 7887
Top el 7910

Catch Basin

350

W 21

E 30,900

Exist. Construction Fe

N 21,783

10.0

Lumber

4

10.0

(Carpenter) (Timber) (on top) (on top)

10.0

Inv. 7971

E 30,850

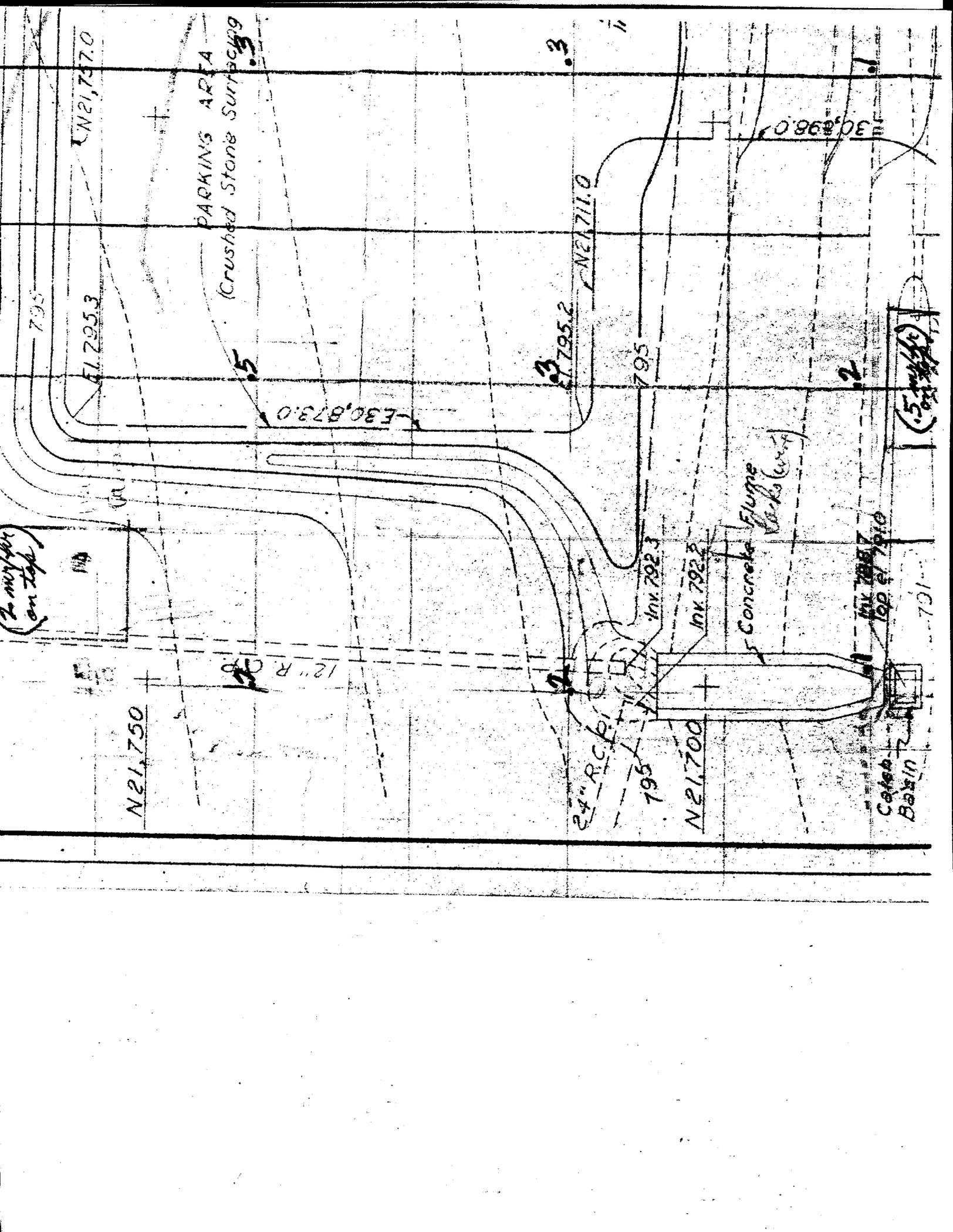
801

N 21,800

500

10.0

4



3017
x(19) 12

3011
x(18)

No. Tank Farm
Pres. Shops

3026
C D

x(2) 24

x(3) 10

x(4) 11

x(5) 11

x(6) 11

3515

x(7) 7

x(9) 10

x(8) 7

3509

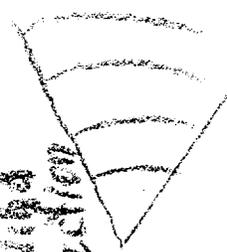
3508

x(10) 8

x(11) 8

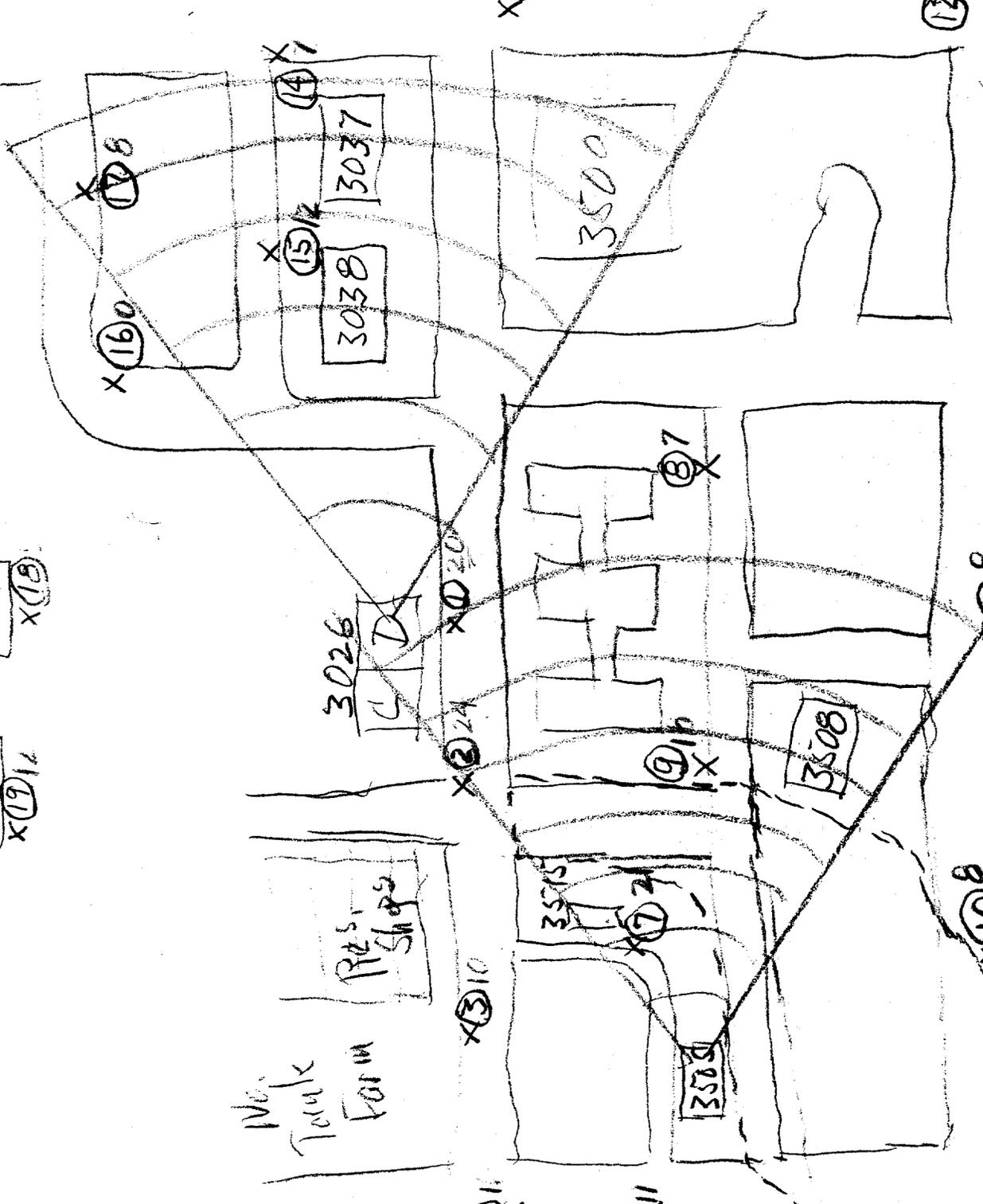
3503

Wind direction



311

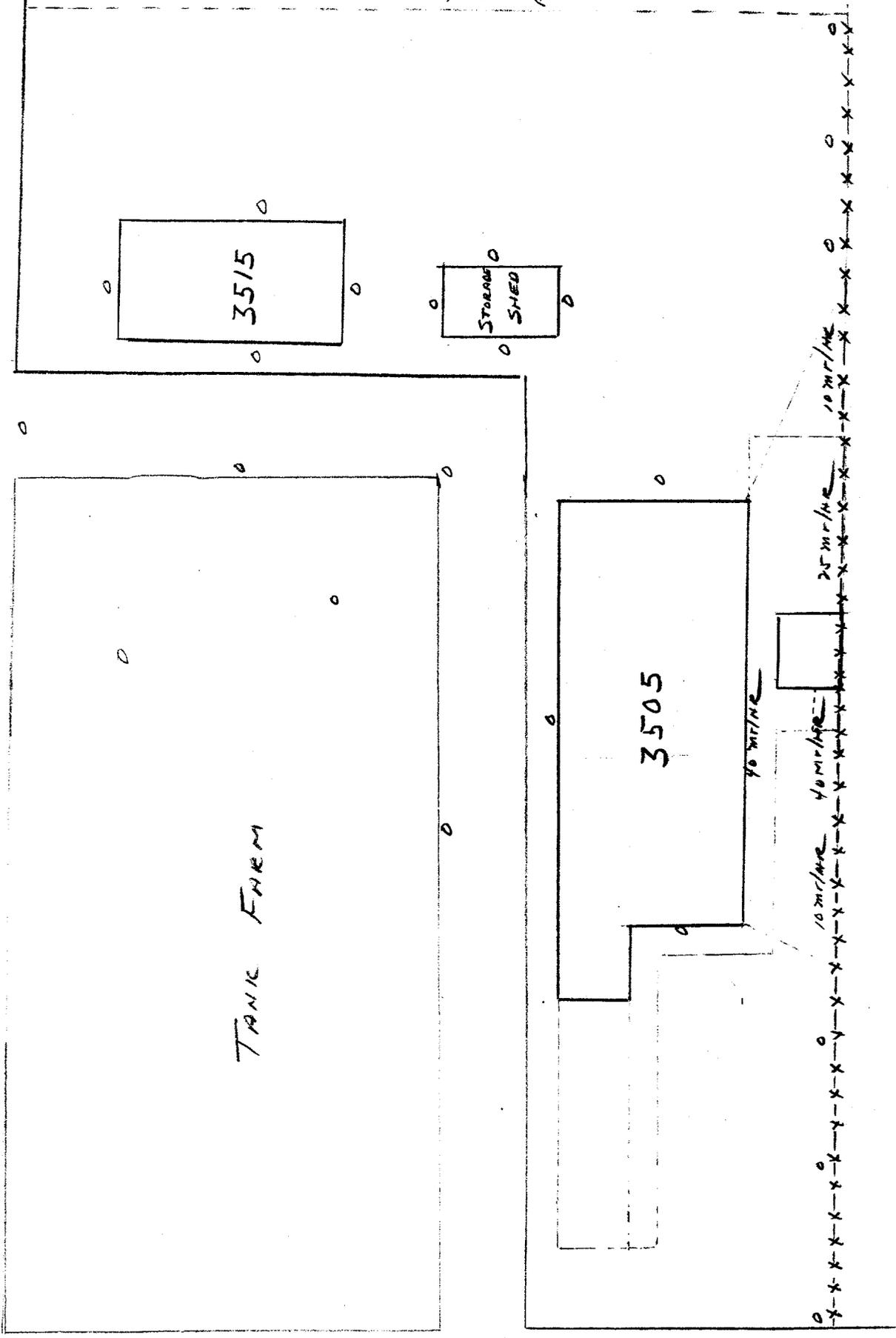
All samples taken for 3 min @ 4500 c.c./min of air.
Wind - light (0-5 mph), variable NW to SW.
1-18-56 P.M.





0 - 5 mi/hr

CENTRAL AVE.



FORM

January 19, 1956

Counts Increase

<u>Time</u>	<u>HP-1</u>	<u>HP-2</u>	<u>HP-3</u>	<u>*HP-4</u>	<u>HP-5</u>	<u>HP-6</u>	<u>*HP-7</u>	<u>HP-8</u>	<u>HP-9</u>	<u>*HP-10</u>	<u>W. **D.</u>	<u>W. V.</u>
8AM		150	-		200	-		100	150		N	1
9		-	-		200	20		-	200		NNE	1
10		-	-		-	-		-	100		NNE	2
11		-	-		400	20		-	-		SSW	1
12		-	50	50	-	-		-	-		SSW	1
1PM		50	150		-	-		50	-		SSW	5
2		-	-		400	20		-	100		WSW	6
3		200	50		-	-	150	-	-		WSW	7
4		100	50		400	-	-	-	50		WSW	6
5		-	-		-	-	-	-	-		SW	4

*HP-4 Suspected partial blocking for 20 Min. 5:25AM and 8:00 AM
10:40 AM to 1:45 PM

*HP-7 Suspected partial 10:25 AM to 1:30 PM

*HP-10 " " 6:25 AM - 4:30 PM From 5:PM to 5:35 PM increased 750 cts
Back to 500 at 6 PM

** 4:00 AM wind shifted from North to NW, 4:30 to NNW Back to ENE 5:00 AM

DAILY METEOROLOGICAL RECORD

Day of the Week Mon 1/6/56

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
Temperature												
Wet Bulb Diff.												
Precipitation (0-10)												
Cloudiness							10	10				
Wind Direction	WSW	WSW	W	W	W	W	W	W	W	W	W	W
Wind Velocity (m.p.h.)	7	7	5	5	5	6	5	4	5	5	5	5
Temperature Inversion												
Relative Humidity %												

Max. Temperature _____ Time _____ Min. Temperature _____ Time _____ Mean Temperature _____

Total Amount of Precipitation _____ inches, Time Beginning _____ Ending _____

Prevailing Wind Direction W Average Velocity (m.p.h.) 5.5

DAILY METEOROLOGICAL RECORD

Day of the Week Tues. 11/7/56

HOUR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Temperature																									
Wet Bulb Diff.																									
Precipitation (0-10)																									
Cloudiness								8				3													
Wind Direction	W	NW	NW	NW	NW	W	NW	N	N	N	N	N	NE	NE	NE										
Wind Velocity (m.p.h.)	2	2	2	2	2	3	3	2	1	1	4	4	3												
Temperature Inversion																									
Relative Humidity %																									

(The North Arrow)

Max. Temperature _____ Time _____ Min. Temperature _____ Time _____ Mean Temperature _____

Total Amount of Precipitation _____ inches, Time Beginning _____ Ending _____

Prevailing Wind Direction _____ Average Velocity (m.p.h.) 2.3

3505 FILTER SYSTEM

1. using filter at $\sim 2\frac{1}{2}$ times rated capacity
rated 1000cfm - using at $\sim 2500cfm$
2. NO gasket seals on filters
3. Flow through filters should be reversed
4. what appeared to be a cyclone separator
is only a liquid trap.
5. Efficiency of filter media - unknown
6. HNO_3 fumes seen emerging from stack
when power is shut down & started up.
Proposed by Lewis & c - - ?

1. Reduce vacuum from 6" to 3' - to
cut down flow through system
2. Install home-made cyclone
instead of liquid trap.
cyclone to have charcoal bed included
~~in parallel~~

(Ogg, see Coll about this)

CWS # 6 waterproof
 thickness = .033 - .043 in
 Air Pass
 mm H₂O
 1 layer 115 mm
 strength 1.5 Mpa in width

85 L/m - 100 cm²

cut of CWS

Hood FILTER

600 ft³/min → #65

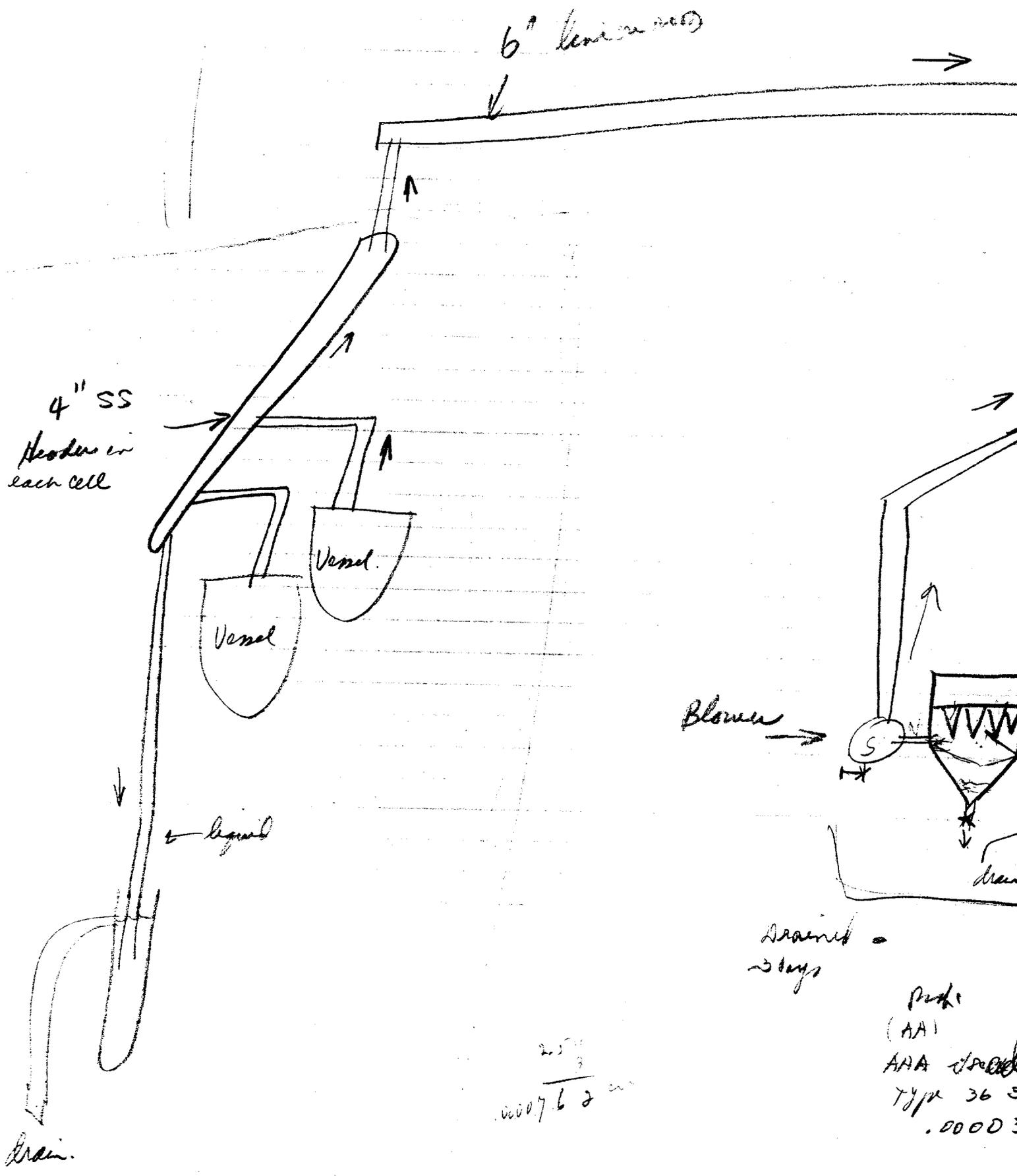
24" x 24" x 11 1/2" deep.

~~CWS # 6 waterproof
 20" H₂O - With out
 (complete protection)
 mm H₂O 85 L/m - 100 cm²
 50 - 5 layers (10 layers)~~

FG 50
 1/10 cm/sec - 94%
 15 cm/sec - 92
 20 L/min 88%

6" header

4" SS
headers in
each cell



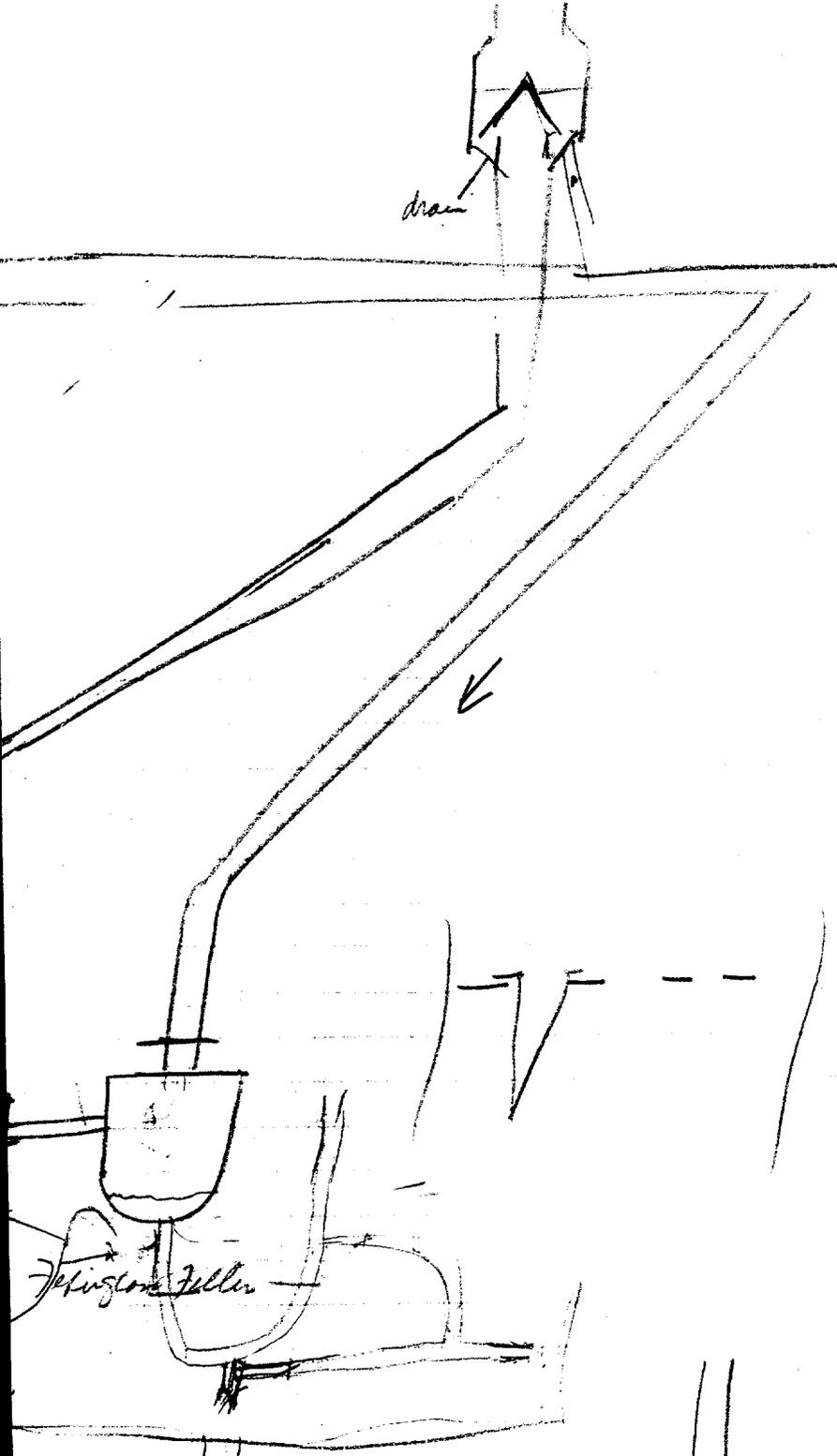
Blower

Drained -
steps

Part
(AA)
AAA
Type 36
.0000

2.5
00007.6 2

0.0003 in .03 mm

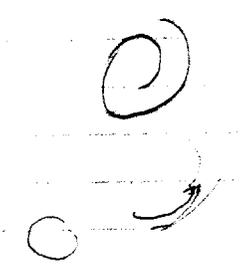
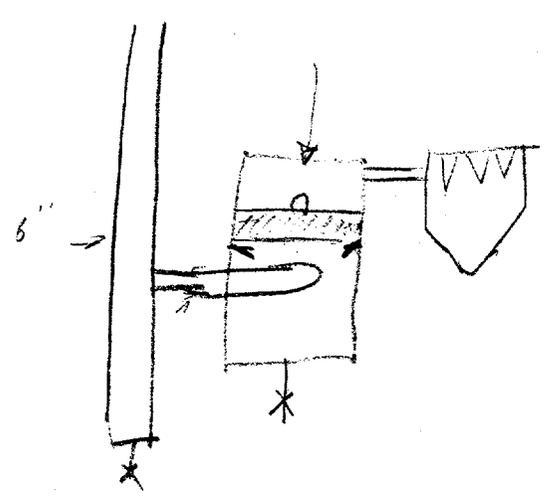


Est 2500cfm
reducing vacuum from
6" H₂O

Set to
W-6 - 6 AM daily

NOV. 1 - Hat put on
stock

Normal air
activity in control
room of 3505



glass
? (prop. sum.)
007 white head 131dg
stands for

1/2 x 1/2 in. strips of 57 contain
1000 gpm ft. gross

Salvage yard, storage yard

only best
3 out of 50

Faults with 3505 off gas system to correct

Replace canitic scrubbers (now out)

Replace "cyclone" separator with real cyclone separator *

Repack filters properly (discard torn pieces)

Gasket filter frames properly (no bypasses)

Invert filter to discharge from top

? Install condensers (for steam) in line?

Increase size of filters for rated
capacity (not to be exceeded)

* cyclone separator sized to thruput volume.

Filters installed in waste tank vents W19 W20

1. Put stop to pollution sources

Modify 3505 vent system

Filters in W-19 + W-20 tank vents

Other sources if any *

* Analyses, as needed, to determine sources.

2. Cleanup transferrable contamination in FPP construction area

Wash down

2000 μ m of Co^{60}
200 μ m of ?
20 μ m of S^{90}

Scrub down

Spray paint

Spread fresh gravel

3 Return workers to job (as in Atomic Energy Program - no bag job)

Hand + shoe counters - use before meals + leaving

Washup facilities - " " " "

{ if optimistic as to recurrence, improbable }

Provide protective clothing
check man before leaving

Work in own clothing

laundries check delivers routine
time to put on, time to take off
collect, take to laundry

check (2 Hrs per 30 min)
daily before leaving
pay for contamination

Access to shower as needed (pay overtime)

Monitor work area (possible restricted time)

Badge meters as at present

Covered or remote parking facilities

Van ok (check car) Shuttle bus furnished

4 Pay for form lumber tools, equip etc

11-1

1-19-56

2

2

REQUEST FOR CONTROL ANALYSIS

This form is to be used only for samples containing less than 50 milligrams concentration of fissionable material.

NAME _____

DATE SUBMITTED 1-24-56

SERIES NUMBER _____

Charge 3194

SAMPLE CODE	DESIRED ANALYSIS	ESTIMATION OF CONCENTRATION	PREVIOUS HISTORY OF SAMPLE	NATURE AND ESTIMATION OF ACTIVITY	CONCENTRATION OF ALL CONSTITUENTS IN SAMPLE
M-2 (Wash-off from roof of computer shed by TAP water) <u>WWE/070</u> <u>~ 12 1/2 area ft</u> 17.4 18.2 48.6	Gross γ	5.72×10^3		cpm/Liter	2-5-56
	G β	8.5×10^3		cpm/Liter	1-30-56
	Cs β	~517		"	2-2-56
	Sr β	1.48×10^3		"	1-30-56
	Ce β	1.55×10^3		"	1-30-56
	Ru β	2.87×10^3		"	1-30-56
	Ru α	~43		cpm/Liter	at 52% geom. 1-30-56

Note:

Filtered one liter of solution and evaporated down to 50 ml and ran radiochemical analyses from this.

The solids seem to have Ru¹⁰⁶ and Ce¹⁴⁴ present ~~for~~ as determined from a gamma scan with scintillation spectrometer.

W. D. Cottrell
Requestor

1/17/56

Work-off of set of carpenter shed
(MILAN road, south of 3505
(sample collected 1/17/56)

Sec. 107
220

INSOLUBLE portion (500 ml sample)

#1 Grass (crucible + sample)

43.4518 g

43.4199

0.0319 g sample M-1-2

6845 g/m

#3 Grass

43.4199

43.3907

0.0292 g sample M-2-

5248

#4 Grass

43.3907

43.3189

0.0718 g sample M-3-

Tare (crucible)

43.4518

42.8041

0.6477 g wt of sample
from 500 ml.

20304

$$\frac{.6477}{.0319} \times 6823 =$$

38,530 g/m / 500 ml

277.06 g/ml @ 10%

WD Cornell

COUNTING ROOM DATA - HEALTH PHYSICS DIVISION, ORNL

Instrument No. _____ Background Window (mg/cm²) 38 C/M 50 Geometry Factor 50 % Study Date of Sample 1-18-56

Batteries Recorder Reading 5000 Scaler Factor _____

Counting Date or Sample No.	Dish No.	Shelf No.	Absorber mg/cm ²	Recorder Reading	Lights	Time Mins.	C/M	CCC	CCB	CCG	Remarks
	M-1i			496	33	2	31,760				
	M-1i			566	28	2	36,238				
	M-3i			856	60	2	54,814				
	H-1			1010	24	2	64,652				
	M-1i			19	55	12	106				
	M-2i			12	41	10	81				
	M-3i			9	37	5	120				
	H-1			7	20	5	93				

Note: CCC - Counts per minute (C/M) corrected for coincidence at _____ %/thousand (0 - 5,000 C/M) which ever applies (5,000 - 15,000 C/M) (15,000 - 30,000 C/M)
 CCB - C/M corrected for background; CCG - Counts per minute corrected to 10% geometry.